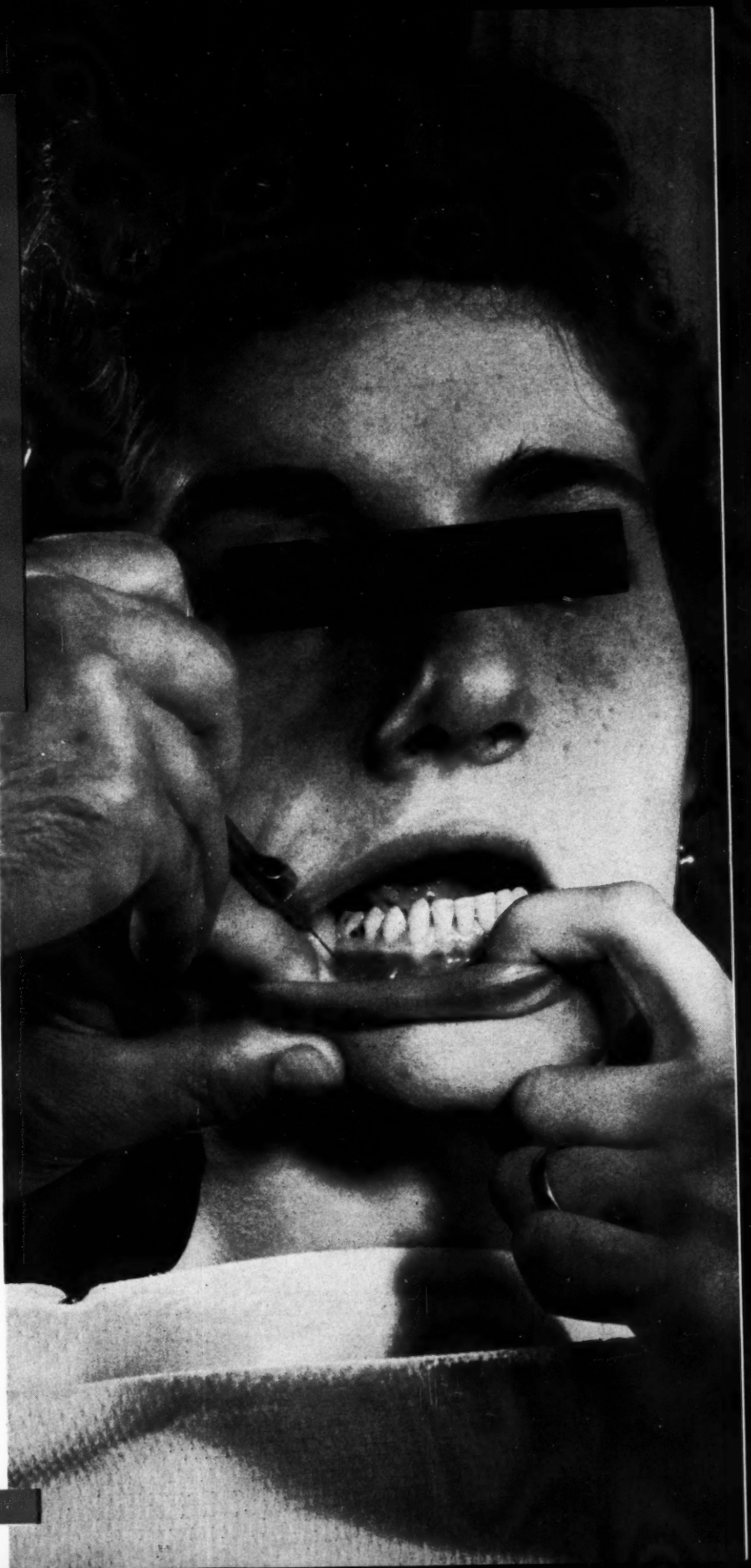
Dental Digest



November 1957

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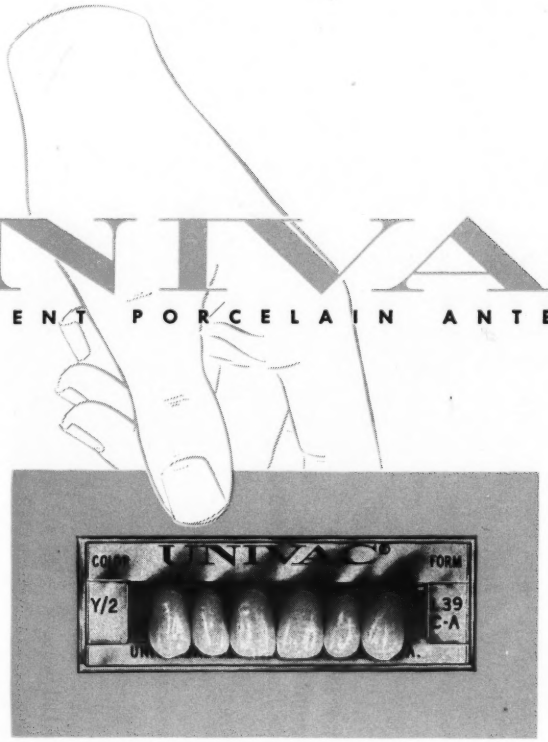

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Vol. 63, No. 11

Dental Digest

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NOVEMBER 1957

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About Our CONTRIBUTORS

JOSEPH ANTHONY HOPKINS, D.D.S. (Northwestern University Dental School, 1918) formerly specialized in oral surgery and is now engaged in the practice of general dentistry. Doctor Hopkins taught oral surgery for twenty-five years and has to his credit a variety of publications on dental subjects. With his co-author, JOSEPH R. OLSON, D.D.S. (Chicago College of Dental Surgery, Loyola University, 1953) who is also a general practitioner, Doctor Hopkins presents AORTIC ARTERY GRAFTS TO REMODEL THE AVEOLAR RIDGE.

THOMAS E. PROSSER, D.D.S. (St. Louis University School of Dentistry, 1916) specializes in periodontia and the treatment of oral pathology. Doctor Prosser presents in this issue the second installment of his three-part article, PROBLEMS AND THERAPEUTICS IN THE MANAGEMENT OF PERIODONTAL DISEASE.

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708 Church Street, Evanston, Illinois

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AORTIC ARTERY GRAFTS

to Remodel the Alveolar Ridge

J. A. HOPKINS, D.D.S., and J. R. OLSON, D.D.S.
Rockford, Illinois

DIGEST

This is the description of a method to rebuild the alveolar ridge with a graft from a blood vessel.

Where the alveolar ridge has been resorbed and it is necessary to reproduce tissue, the best results are usually obtained by buting the teeth against the ridge, thereby taking advantage of the natural appearance of the tissue. The contour of the natural ridge tissue can also be restored by using an aortic graft.

When sufficient bone exists, contouring the alveolar ridge by alveoplasty is still considered the desirable method of correction. Thoma[1], Kazanjian[2], Gorney, Gorney, and Foman[3] have reported obtaining greater ridge area by deepening the sulcus. With the present supply of antibiotics and tissue banks, it is possible to add new bone to the resorbed areas. This article describes the step-by-step procedure for grafting an arterial segment.

Reconstruction of Hard Tissue by Arterial Graft

This is a preliminary report on the rebuilding of the resorbed alveolar ridge by the use of a graft taken from an autopsy specimen of the human aorta. This method has been adopted in rebuilding areas of ridge that had been lost through resorption or surgical intervention. The artery graft was used to restore the contour and substance of the ridge to create a base upon which a more efficient and esthetic partial denture could be constructed.

Future Possibilities of Method — Blackstone and Parker[4] have described a method of adding to mandibular ridges for better retention of dentures. Their experimentation was largely on dogs although one case involving a human being was reported. It is believed that this method may become useful in correcting the alveolar ridge in all areas. So far we have employed it on smaller areas and have not attempted to use it in rebuilding full ridges.

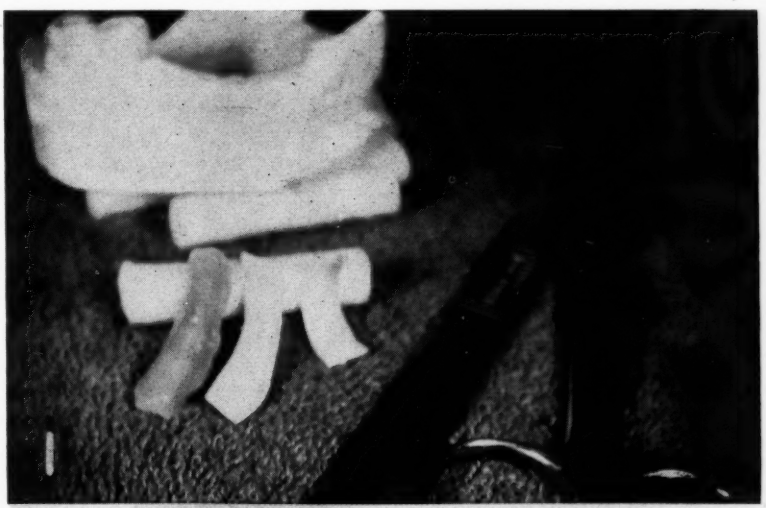
Rebuilding of Lost Bone Reported —Schaffer[5] reported recently on using cartilage in the actual rebuilding of lost bone around periodontally involved teeth.

Two Case Histories Reported

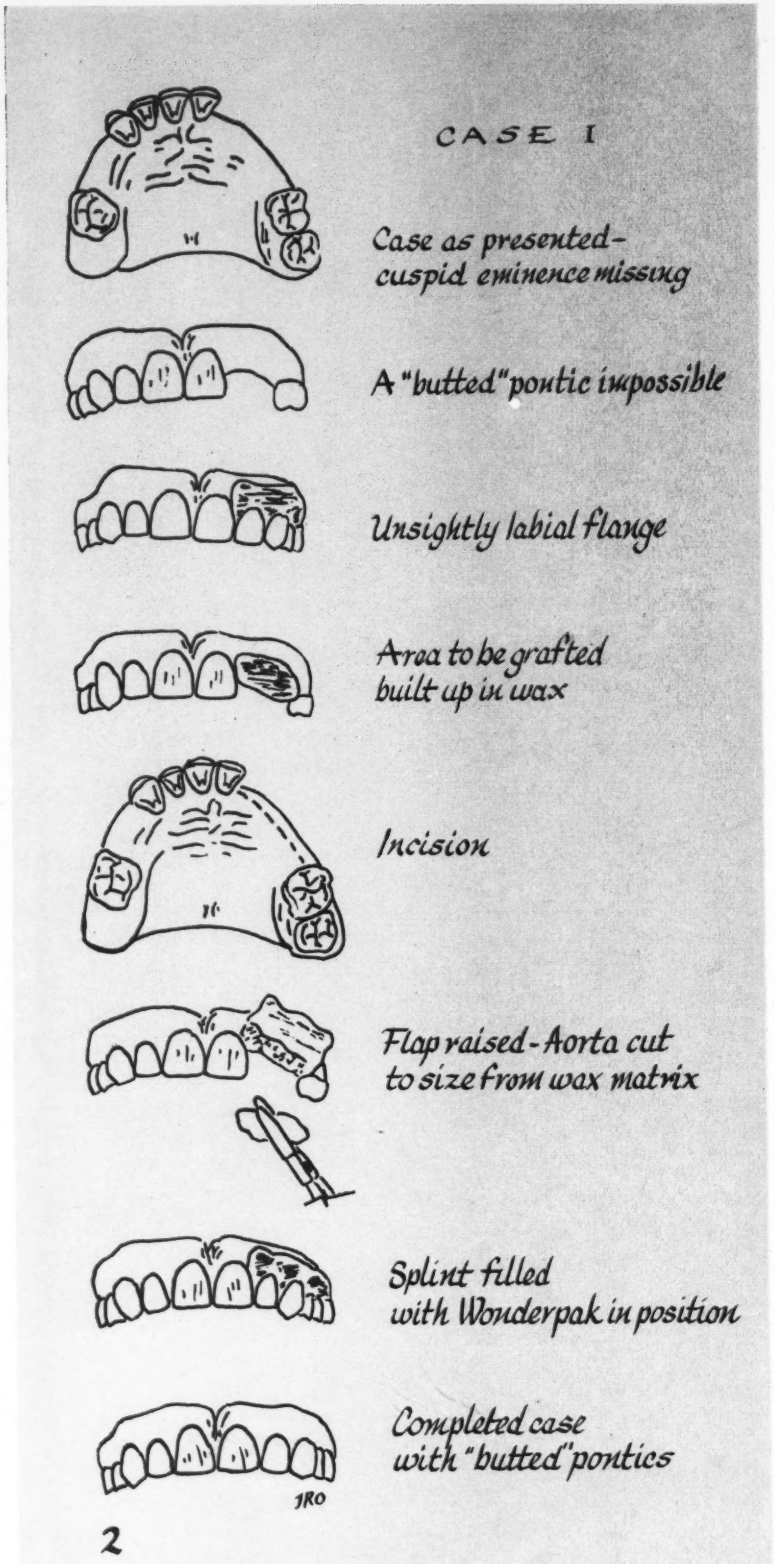
In one of the cases reported here the defect occurred from a surgical accident and in the other from natural resorption.

Case One—The patient in this case was a white woman 61 years of age.

[1]Thoma, K. H.: Oral Surgery, St. Louis, The C. V. Mosby Company, 1948. pp. 174-226.
[2]Kazanjian, V. H.: Surgical Operations as Related to Satisfactory Dentures, Dental Cosmos **66**:387, 1924.
[3]Gorney, H. S., Gorney, A. J., and Foman, S.: Creation of Mandibular Ridge by Deepening the Labial Sulcus and Lining it with a Skin Graft, JADA **29**:275, 1942.
[4]Blackstone, C. H., and Parker, M. L.: Rebuilding the Resorbed Alveolar Ridge, J. Oral Surg. **14**:45 (Jan.) 1956.
[5]Schaffer, E. M.: Cartilage Transplants into the Periodontium of Rhesus Monkeys, Oral Surg., Oral Med., and Oral Path. 9:1233 (Nov.) 1956.



1. ***Shows a working cast and several segments of the aorta that will be used in the graft.***



2. ***Illustrates the surgical procedures in Case One.***

Her physical condition was above average.

Dental Condition—The patient exhibited marked alveolar ridge loss in the maxillary left lateral incisor and cuspid region. This was caused by fracture of the cuspid eminence in an extraction some years before. The maxillary left first and second bicuspids as well as the first molar were also missing. The remaining teeth were in excellent repair and periodontally sound.

History—(1) For many years the patient had worn a maxillary partial denture. This detracted from her appearance because the cuspid eminence was built up in acrylic and was visible during speech.

(2) Several attempts had been made with various tissue-colored acrylics to duplicate the tissue but all were unpleasing. To improve the esthetics, a full maxillary denture was considered, or at least the extraction of the remaining anterior teeth.

(3) A graft in the area was decided upon but bone chips and other conventional methods were ruled out because of the difficulty of placing them in this area. Gelfoam® had been inserted in incisions in previous cases but the amount of tissue build-up that could be obtained was never assured. We believe, however, that fibrous connective tissue will eventually form bone.

Method Employed

A study cast was made from a hydrocolloid impression, the area to be built up was simulated with baseplate wax, and another impression taken. On this cast a temporary, all-acrylic, partial denture was constructed covering the graft area entirely and extending beyond it several millimeters. This was done to prevent impingement on the edge of the graft.

Aorta Artery Segment Obtained from Autopsy — This segment was washed in sterile saline solution. Bacteriologic studies were made on the saline wash. The periarterial fat and connective tissue were carefully trimmed away. The aorta segment was then sterilized by three steps.

First Step in Sterilization Procedure—(1) The trimmed arteries were

placed in a clean, wide-mouthed, screw-capped glass jar, approximately 8 by 16 centimeters in size, and the container kept in an ice bath.

(2) Cold isotonic saline solution previously chilled to 4 to 5 degrees Centigrade was put into the jar using 450 milliliters: 0.3 milliliters of 1 per cent phenol red indicator.

(3) Sufficient powdered sodium bicarbonate (8.4 grams) was added so that the final concentration was 0.2 molar solution.

Second Step—(1) A 10 per cent solution of beta-propiolactone (BPL) was prepared prior to use.

(2) This concentrated BPL solution (specific gravity 1.149) and distilled water were kept in an ice bath to prevent hydrolysis

(3) Concentrated BPL, 4.4 milliliters, brought to volume with cold distilled water was placed in a 50-milliliter glass-stoppered columetric flask and shaken vigorously until the drug globules went into solution.

(4) The 50-milliliter volume of 10 per cent BPL was then added rapidly to the 450-milliliter volume of saline-bicarbonate solution. This was done to give a final concentration of 1 per cent BPL for arterial sterilization.

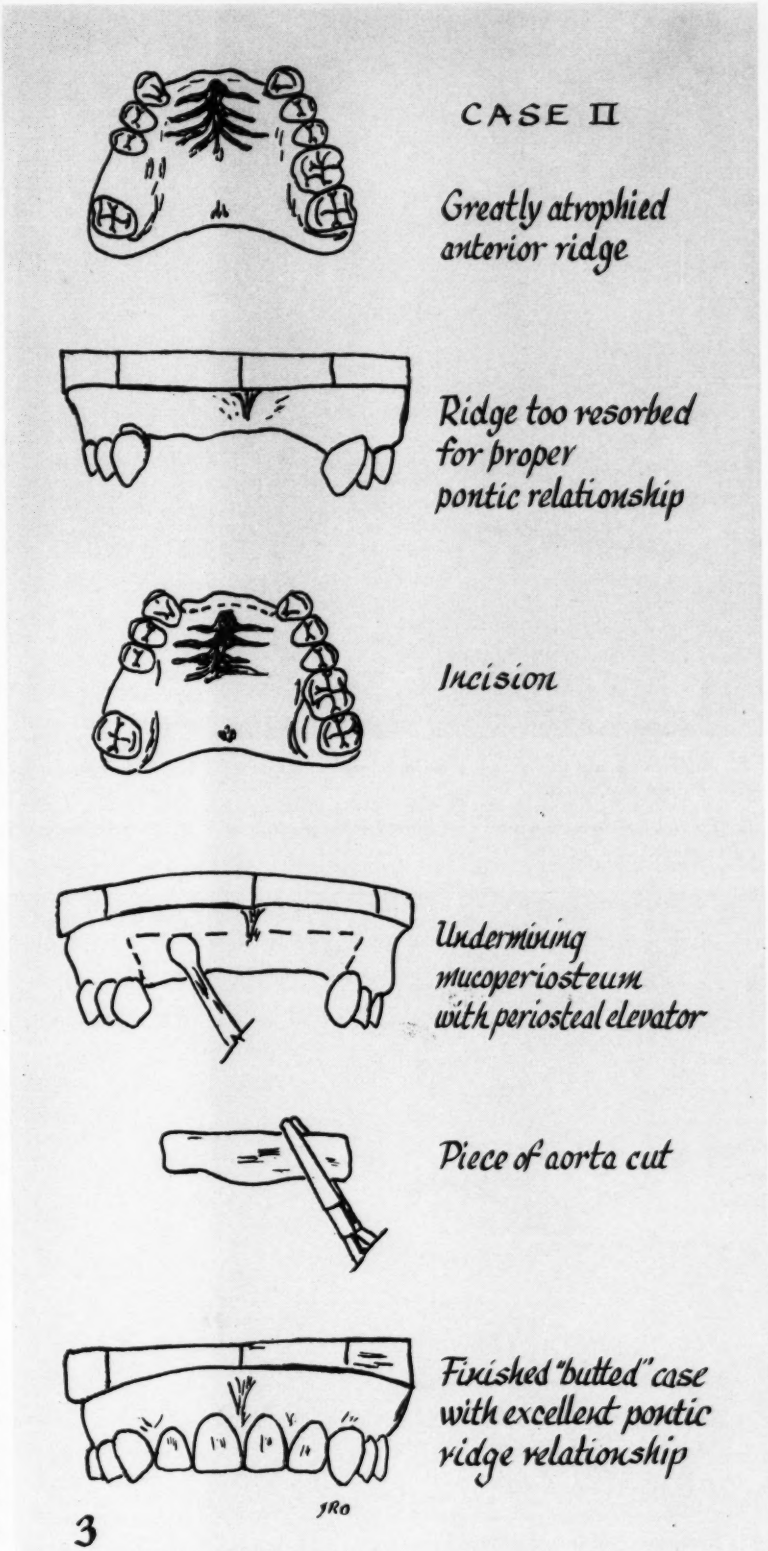
(5) We consider it imperative to shake the beta-propiolactone solution vigorously for a few seconds in the closed container in order to sterilize the screw cap and rim of the jar as well as the arteries.

Third Step in Sterilization—(1) The mixture was incubated at 37 degrees Centigrade for two hours in a water bath, or three hours in an incubator.

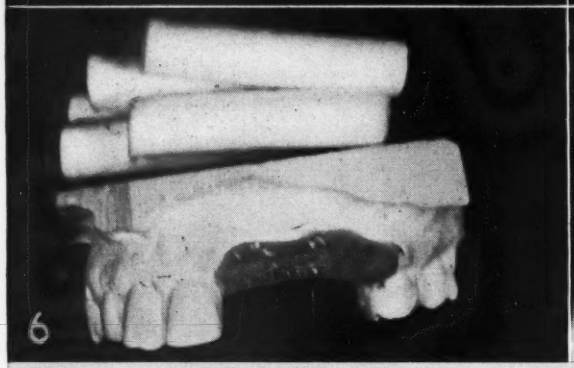
(2) It is well to bear in mind that after incubation beta-propiolactone is completely hydrolyzed and the products of hydrolysis are not bactericidal, fungicidal, or virucidal.

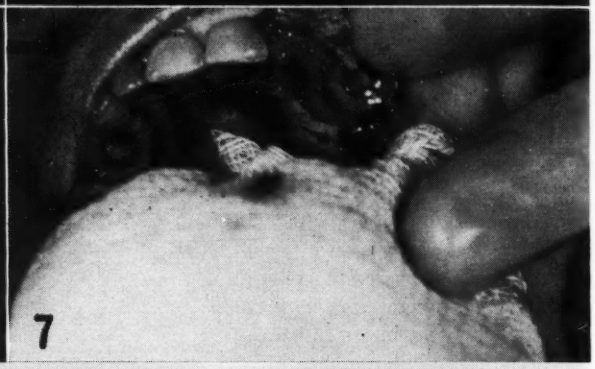
Arterial Specimens Handled Aseptically—(1) The mouth of the container was flamed, the arteries taken out of the jar, washed in 0.2 centimeter of phosphate buffer solution (pH 7.4), and transferred to a sterile storage flask containing Ionosol Solution® (Abbott).

(2) Satisfactory for storing the arterial specimen is a Fenwal cylindrical pyrex container, 350 milligram



3. ***Illustrates the surgical procedure in Case Two.***



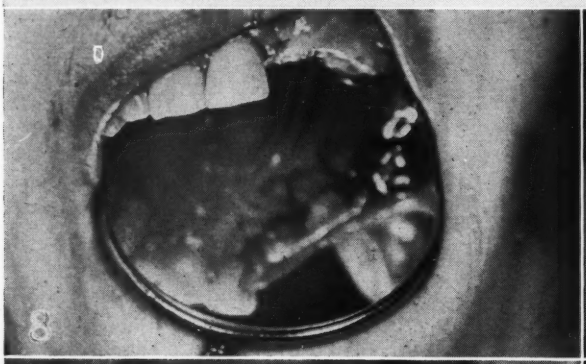


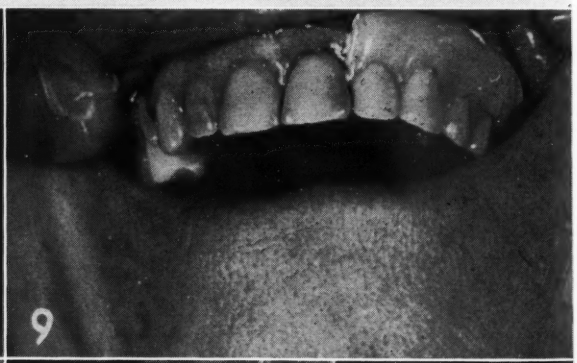
4. *Model showing depressed area in lateral and cuspid area before operation.*

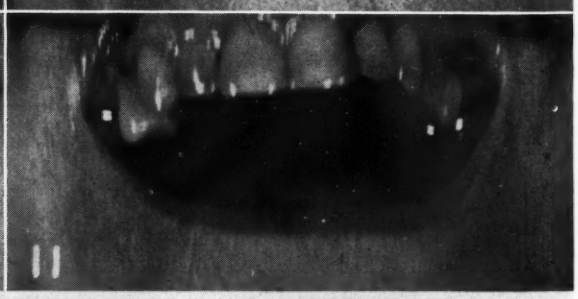
5. *Partial denture shown on cast worn before placing of aorta graft.*

6. *Wax pattern to be replaced by aorta graft to build out alveolar ridge.*

7. *Incision in tissue reflected from lingual to buccal.*







8. *Tissue sutured in place over aorta graft.*

9. *Original partial trimmed out to allow for Wondrpak. The graft should have this light pressure.*

10. *Tissue one week later with sutures removed.*

11. *Finished case showing lateral, cuspids, and bicuspids butted into place. This case looks the same one year later.*

capacity, with a Telovac rubber diaphragm. This can be punctured with a needle to withdraw fluid for ascertaining sterility.

(3) The specimen was refrigerated at 1-40 Centigrade.

(4) After 24 hours a culture of the solution was taken, penicillin (200 units to a milliliter), and streptomycin (1 milligram to a milliliter) were added to minimize subsequent contamination.

Specimen Transferred to Operating Room—At the time of the surgical procedure, when the size and shape of the artery had been determined, the suitable graft specimen was brought to the operating room and transferred to lukewarm saline solution. After a thorough rinsing in isotonic saline the graft was ready for use.

Lyophilization of Arteries After Sterilization—Arteries processed in this manner have been used within four weeks. It is preferable, however, to lyophilize the grafts soon after sterilization because the arteries can be stored for a longer period of time in the dehydrated state. Lyophilized arteries can be reconstituted by placing them in normal saline solution prior to use.

Procedure Used to Graft Artery

The following steps were taken:

1. Using autoclaved instruments and casts, several pieces of aorta were cut to match a wax matrix of the area to be grafted.

2. No attempt was made to separate the layers of the aorta and no special area of the aorta was used.

3. Thickness of the aorta was approximately 1 to 2½ millimeters. We did not try to use multiple thicknesses because of the dead space between the layers which might cause failure of the graft to vascularize and ossify.

4. In view of the mild postoperative discomfort it was believed that multiple grafts would be better if more than one layer of aorta were needed.

Preparation for Surgery—The method of preparing the patient for surgery was that suggested by Hopkins[6] for the prevention of bacteremia and dry socket. This consisted of giving two tablets of sulfonamide triplex 7.72 grains every four hours for six doses, and atropine sulfate, 1/120 grains.

Surgical Procedure—1. The mouth was prepared with a Zephiran® scrub and the graft area isolated with sponges.

2. A mucoperiosteal incision was made parallel to the ridge and approximately eight millimeters palatally. This flap was reflected from the central incisor area to the mesial of the first molar.

3. The aorta, freshened in a normal saline solution was placed in position and the area sutured with 00 black silk. One suture was placed circumferentially about the central incisor to prevent recession of the gingiva.

4. The flap was reflected just enough to slip the aorta under it, as suturing through it was extremely difficult. In later cases we found that undermining the tissue from the incision made insertion of the aorta easier.

5. Elevation of the periosteum was imperative in all therapy of this type.

6. The temporary partial denture was checked for extension and occlusion, filled with Wondrpak®, and inserted to create pressure on the area. Thoma[1] refers to this measure as an essential feature of all grafts.

Postoperative Measures

Two days after surgery moderate swelling was present, extending to the orbit. Pain was controlled with aspirin. In later cases, hyaluronidase eliminated swelling. The area was cleansed with a fine spray. In later cases the splint was not removed for one week.

Removal of Sutures—One week postoperatively the sutures were removed.

Partial Denture Constructed—A cast partial denture was constructed of the "butt gum type" and the teeth were tightly butted into the area. This was done by heavily relieving the model before placing the teeth in position. The results were immediately pleasing and the patient was highly satisfied.

Contour of Graft Maintained—One month after surgery the partial denture was reconstructed to a butt gum type case with no pressure on the graft. At this time there was excellent dimpling in the area where the teeth were butted and even pseudo interdental papilla filled in the slight areas between the pontics. The contour of this graft has remained the same after one year.

Second Case History

The patient in this case was a white woman 45 years of age. Four maxillary anterior incisors, the right molar, and the left second bicuspid were missing. The anterior region was markedly reduced. The patient stated that her teeth had been extracted because of "pyorrhea." The cuspids were in poor position for a fixed bridge. Even if this situation could have been overcome, the pontic-ridge relation would have been extremely poor. The partial denture the patient was wearing had a labial flange to build up the anterior area which was visible during speech and laughter.

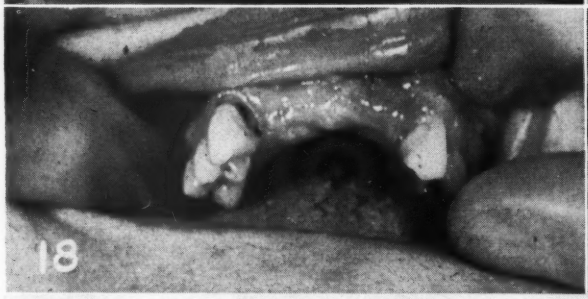
Arterial Segment Grafted—A study cast showed that a graft in the area would greatly improve the patient's appearance. The same procedure was followed as in Case One except that a thicker piece of aorta was selected to build up the area. After healing was complete, a cast partial denture was made with four anteriors of the butt gum type. Again dimples developed in the graft area. The net result was a decided improvement of the woman's appearance.

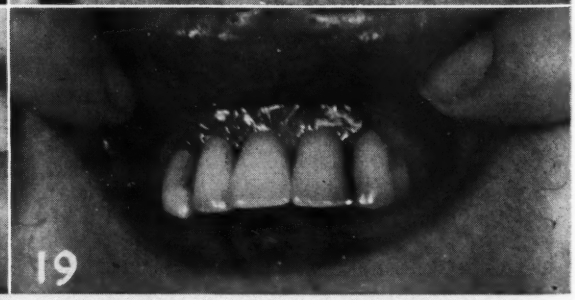
Postoperative Conditions—This case presented no postoperative swelling. Although the graft was larger than in Case One there was only a slight amount of pain. The incised area, however, healed more slowly and in one place had to be allowed to heal by second intention as the incision remained open after surgery.

Histologic Evidence of Ossification—These grafts became palpably harder after three months. Black-

[6]Hopkins, J. A.: Premedication for Prevention of Bacteremia and Dry Sockets, Dental Survey **30**:1263-1417 (Oct. and Nov.) 1954.

12. ***Original partial of laterals and centrals with acrylic labial.***
13. ***Cast of case showing resorbed labial plate.***
14. ***Incision from palatal area tissue deflected to labial.***
15. ***Aorta graft sutured in place.***





16. ***Original partial trimmed out to allow for Wondrpak. The graft should have this light pressure.***
17. ***One week after operation with sutures removed.***
18. ***Second week after operation showing healed tissue.***
19. ***New partial replacing centrals and laterals butted against labial tissue.***

stone and Parker[4] showed histologically that almost complete ossification takes place in two hundred and sixteen days.

Additional Grafts Completed

Four other grafts of this type have been completed. Three of them were to replace lost ridge in the central and lateral incisor areas and to place pontics in correct position in fixed

bridges. The fourth case completed was to fill in one of the bilateral undercuts in the maxillary tuberosity region of a denture patient. This kept the width of the denture-bearing area the same and prevented the commonly occurring sore spot in that region.

Comment

It is suggested that perhaps multiple grafts of this type could be used to gain additional bone area for the support of prostheses. This we believe will be possible after more research on the subject has been completed.

810 *Talcott Building*

Loaded Dice

Quantitative Information Needed

We urgently need to have quantitative information about the effect of radiation on human health. Much is already known about the effect of radiation upon health and longevity in the fruit fly and the mouse, but it is obviously unwise to rely on extrapolation of these data to man. Man is, as has often been remarked, a difficult experimental object. But much can be learned about his biological reactions by appropriate statistical and epidemiologic studies.

Relation Shown Between Radiation and Leukemia—E. B. Lewis shows that there is a direct linear relation between the dose of radiation and the occurrence of leukemia, a fatal disease characterized by increases in the number of white blood cells. The meaning of such findings is that any amount of radiation takes its toll of the population and any increase takes a greater toll.

Results Now Calculated—Thanks to Lewis, is is now possible to calculate—within narrow limits—how many deaths from leukemia will result in any population from any increase in fallout or other source of radiation. And for the person it is possible to calculate the probability of death from leukemia as a result of any particular dose of radiation. We are approaching the point at which it will be possible to make the phrase "calculated risk" for radiation mean something a good deal more precise than the "best guess."

It is apparent that the atomic dice are loaded. The percentages are against us and we ought not play unless we must to assure other victories.

———

From *Science* **125**:963 (May) 1957.

Dental Extraction During Dicumarol Therapy

Extraction of 14 teeth without excessive bleeding in six patients who were receiving long-term Dicumarol® therapy is reported. Ages of the patients ranged between 55 and 76 years. Prothrombin concentration varied between 14 and 51 per cent at the time of extraction. One patient on Dicumarol therapy, who had a recurrence of hemiplegia after a severe attack of diarrhea during which the prothrombin concentration reached 100 per cent, preferred the risk of bleeding to thrombosis. Three teeth were extracted with no unusual bleeding; a fourth tooth was extracted later, with normal amount of bleeding. In patients in whom discontinuance of Dicumarol therapy for four days (considered safe in most cases) before dental extraction might induce recurrence of thrombosis, the authors believe the risk of bleeding is less than the thrombotic hazard. Use of emulsified vitamin K_1 will rapidly restore prothrombin activity in case of hemorrhage, although its use was not necessary in the cases reported by the authors, and pressure packing was required in only one case. It is pointed out that in external surface bleeding, tissue juice is available as a source of thromboplastin.

From *What's New* No. **194**:24 (Spring) 1956.

Problems and Therapeutics in the Management of PERIODONTAL DISEASE: *Part Two*

THOMAS E. PROSSER, D.D.S., East St. Louis, Illinois

This is the second installment of a three-part article describing various types of periodontal disease. This installment discusses periodontitis complex. Several cases are illustrated and therapy is suggested.

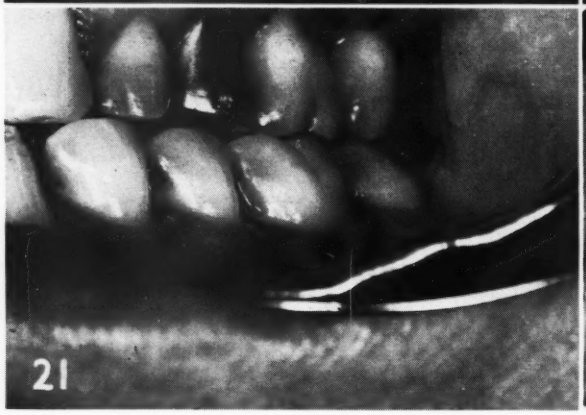
Periodontitis Complex

In this type in its purest form the gingival tissues show little inflammation clinically. In fact, they may appear at times almost normal, or pale and thin with little tendency toward recession in the earlier stages. The progress of the disease may be rapid. The involved teeth in certain situations are prone to displacement, and diastema may form. The pockets usually tend to develop narrowly and deeply along the root surface, but at times may show an early tendency to widen and encircle the root. Tooth mobility frequently is an early sign.[4]

Etiology—Periodontitis complex or periodontosis is seen for the most part in early postadolescent persons and seems to be the result of some preadolescent metabolic, dietary, or emotional disturbance.

Anxiety a Contributing Cause—During the war the author observed a number of female adolescents suffering from moderate to severe gin-

[4]Box, Harold K.: Concerning the Pathogenesis of Periodontal Disease, J. Periodent. **19**:11 (Jan.) 1948.



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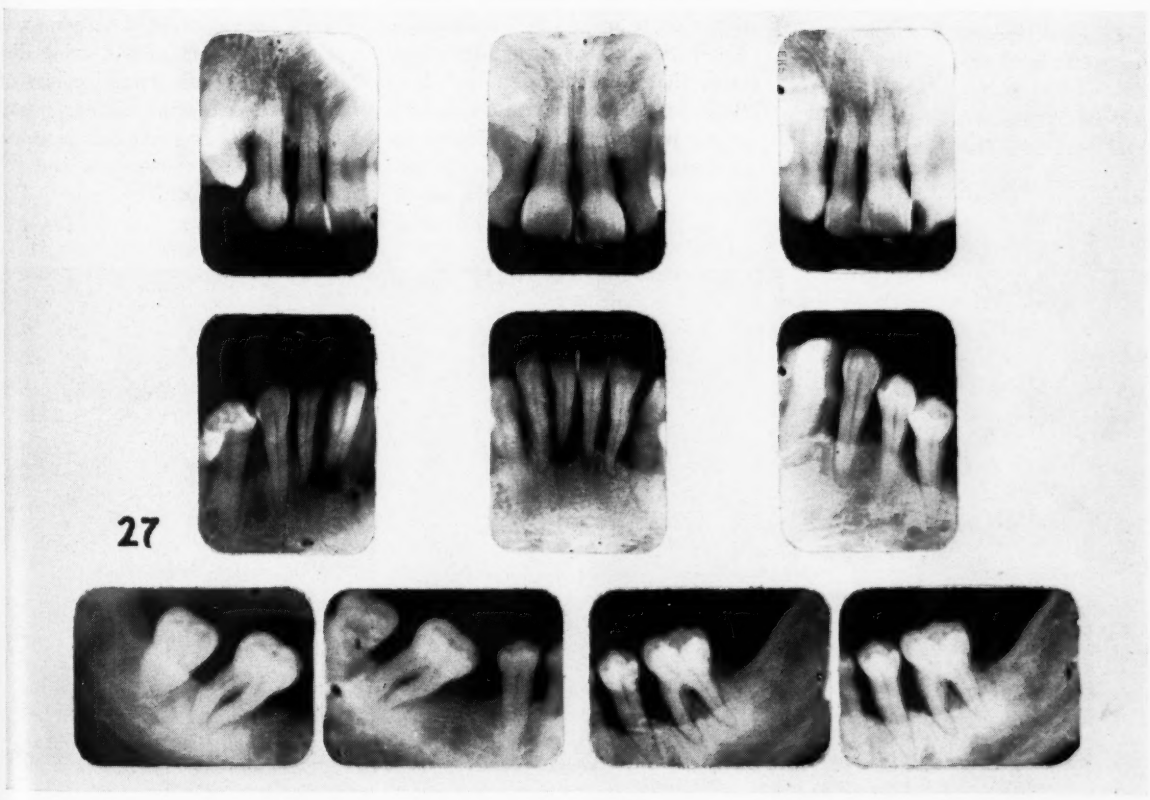
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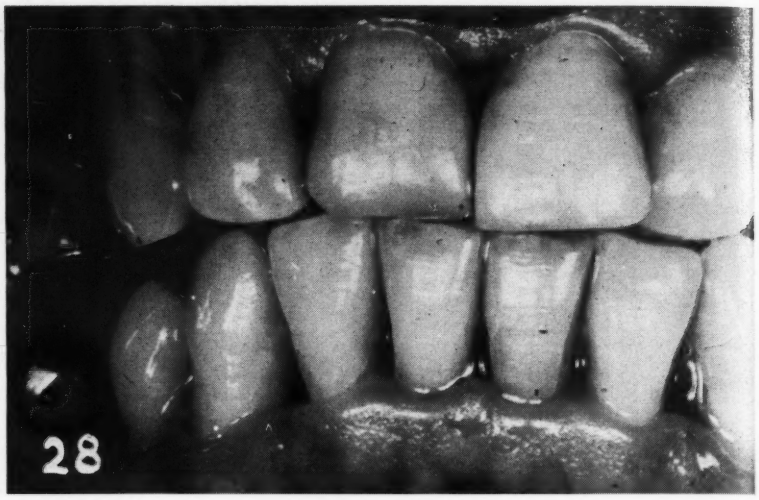
givitis, apparently from psychosomatic disturbances. Anxiety over loved ones in the service caused an anorexia with a resultant poor choice of food, vitamin deficiency, and often a rebellion against proper oral hygiene.

Response to Treatment—Some responded to local and psychologic treatment, some improved after good news was received from their loved ones, with others gingivitis continued and many cases no doubt developed into periodontitis complex.

Evaluation of Individual Factors Difficult—The multiplicity of potentially pathogenic factors make a clinical evaluation of each separate factor difficult.[5]



Specific Problems in Periodontitis Complex

Figure 19—This is a case of periodontitis complex. The patient was a man of 38. Note the boggy inflamed tissue about the maxillary right central and cuspid with fairly normal gingiva about mandibular incisors.

Figure 20—The lingual of the mandibular incisors of the patient in Figure 19 is shown. The condition in this picture seems to be characteristic of periodontitis simplex; however, the patient lost the maxillary left second biscuspid, and first and second molars as shown in Figure 21.

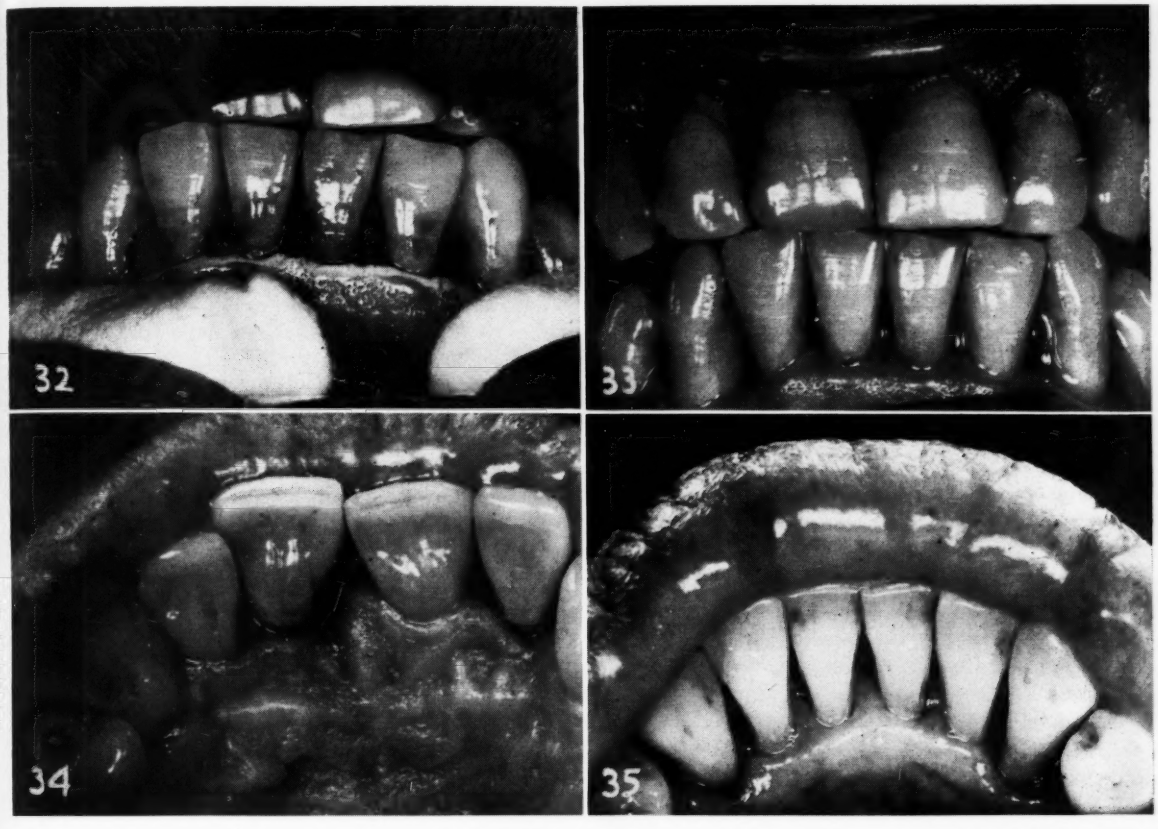
Figure 21—The teeth were lost in this case due to extremely deep pockets and loss of bone. The maxillary right first and second biscuspids and first molar, and the mandibular right and second molar were also lost.

Figure 22—The pockets about the right central and cuspid, shown in Figure 19, were reduced with trichloracetic acid packs.

Figures 23 *and* 24—In a male patient, aged 55, considerable gingival recession is seen with pockets varying in depth from 3 to 5 millimeters. The patient stated when first examined, that this condition had been static for about ten years with little or no treatment. Note the deep recession and edema of the gingiva around the mandibular right cuspid.

Figures 25, 26, *and* 27—In a woman patient, aged 53, there was a medical history of endocrine disturbance. Note the extensive loss of bone around the mandibular posterior teeth and mandibular incisors. These teeth were extracted and replaced with a partial denture. The These symptoms have no doubt been aggravated by the position of this tooth in the arch with an extremely thin labial plate. Treatment procedure included subgingival curettage, pocket reduction with trichloracetic packs, and thorough instruction in toothbrushing technique using glycerite of hydrogen peroxide as the dentifrice to stimulate the tissue and carry oxygen to it.

[5]Ramfjord, Sigurd: Local Factors in Periodontal Disease, JADA **44**:647 (June) 1952.



pockets about the maxillary incisors were reduced with trichloracetic acid packs. The posterior teeth in the maxillary arch were not replaced at this time due to the patient's economic status. The required rehabilitation of teeth is often impossible because the patient is unable to pay for the necessary replacements.

Figure 28—This is a classic example of periodontitis complex in a woman of 60 with apparently no medical history of consequence. Note that the gingival tissue appears virtually normal. Several posterior teeth, however, have been lost due to extreme mobility.

Figures 29, 30, *and* 31—Pockets are shown varying in depth from 4 to 6 millimeters. These were reduced by trichloracetic packs as shown in Figure 32.

Figures 33, 34, *and* 35—Postoperative results are shown after treatment of the pockets shown in Figures, 29, 30, and 31.

Comment

So far in this discussion of periodontal treatment therapeutic procedure has been semiconservative, consisting of subgingival curettage and reduction of pocket depth by a chemical coagulant.

(End of Part Two)

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LIVING OSTEOLOGY

of Interest to the Dentist:

Part Two

MELVIN G. HENNINGSEN, D.D.S., Hayward, California

DIGEST

In this installment, which is the last of two parts, the author discusses the far-reaching effects of trauma sustained in other areas of the body. Injuries from automobile accidents, blows of many kinds, prenatal or birth trauma may be reflected in the region of the head and come under the observation of the dentist. A number of technical measures are described.

Extensive Results Of Trauma

Trauma, even if slight, can produce trouble if applied in a certain way at the right time: (1) An injury causing a flexion type strain in the occipital region can produce externally rotated temporal bones. (2) Strain or injury is reported found in this area at an early age having been produced prenatally or during birth. (3) Automobile accidents, blows on the chin, or other sources of trauma may also produce trouble in this area. According to physicians who treat these conditions strains in the occipital mastoid region produce many body symptoms compared with other areas of the cranium.

Cranial Injuries—Automobile accidents can produce a variety of cranial injuries in addition to cuts, and bruises. Persons sitting in automobiles that are struck from the rear often receive serious "whip lash" trauma of the head and neck. The head can forcefully snap back as a result of the forward thrust producing dislocations, fractures, or strains within the membranes and bones of the cranium and face. The sitting passenger receives the main force in the pelvic bowl and back.

Dissipation of Force—There appears to be an effort to protect the brain from injury and an attempt seems to be made to use up the force before reaching the brain by having it dissipated into adjacent tissues and shunted off into structures from the sacrum up to the neck and head.

Symptoms Evident Inside Cranium—Some of the force can be transmitted upward from the sacrum via the "core link" of spinal dura connecting the pelvic bowl and the cranial bowl. The end result can manifest itself inside the cranium as strains within the reciprocal tension membrane mechanism, and disturbed equilibrium of facial and cranial bones. The temporal bones may become involved and the temporomandibular joint injured. The person may notice a noise when opening or closing the mouth but because this may appear sometime later he way not associate it with the accident.

Case History

A 15-year-old high school girl presented at the office complaining of noise in the left temporomandibular joint upon opening her mouth. She was under the impression that something was hitting in the joint when the jaw was opened. She also thought the left side of her upper jaw was a bit lower (inferior) and the right side was somewhat higher (superior). Upon questioning it was found that she had been in an automobile accident five months previously in which the car was rammed from the rear. Subsequently her neck was sore for about a week. During this time it was painful to move in any direction and she stood stiff as she expressed it. There was pain upon opening her jaw which gradually disappeared. The mandible moved to the left side when the mouth was slowly opened.

Children who have a habit of pressing the chin with the hand while studying can produce pressure that can cause difficulty. She was questioned on this point, but the reply was negative.

Referred to Physician—In view of the history and clinical findings the patient was referred to a physician familiar with these problems.

Physician's Findings—1. X-rays negative, no fractures, no dislocations.

2. Temperature normal. Left temporomandibular joint "cracked" upon opening.

3. Mandible malalined to left upon opening. Occlusion faulty. Pelvis (sacrum) rotated high on left.

4. Upper dorsal vertebrae rigid. Almost no motion in the seventh cervical vertebra.

5. Right temporal bone, external rotation. Left temporal bone, internal rotation.

6. Left maxilla, internal rotation.

Treatment and Results—After gentle manipulative treatment by the physician the joint noise was greatly decreased and the patient was free from symptoms. The mandible remained in the midline when opened. She become less nervous and more relaxed and worried less about school problems. Teachers remarked about her improved disposition and general attitude. These symptoms were noticed after the accident.

Additional Factors In Trauma

In addition to the temporal bones the parietals also receive their share of trauma. While not within the dental field it is of interest that physicians frequently observe the parietals in a strained position in asthma cases. They are often found in the expiration phase or internal rotation position.

External Rotation of Zygoma — Should the zygoma also be strained into a position of external rotation the orbit may be found to be larger in a diagonal diameter on one side. The lateral surface of the nose in this case could be turned anteriorly and observed to show a bit more.

Early Acquired Malpostition—Dentists frequently treat the result of early acquired malposition of the jaws and teeth. Prosthetic appliances are often made upon alveolar ridges that bear the scars of trauma acquired early in life. Orthodontists move teeth that are irregular because of early malpositioning of the jaw bones.

Treatment Time Reduced—It has been observed that treatment time can be reduced as much as 50 per cent in some cases requiring orthodontic care if the problem of the internally rotated maxillae is corrected before orthodontic treatment is started. The palatine bones and the zygomas may also need attention.

Possible Consequences of Trauma in Infancy

Insight into the problem of early acquired malposition of the cranial and facial bones is necessary for better understanding of the situations found in practice. An infant's head and cranial structures may be impaired prenatally or be subject to birth accidents. Among the prenatal influences are tumors, pressures from a twin, a contracted pelvis, automobile accidents, severe coughing by the mother during a cold, bumps, falls. A birth that is too long or too rapid are other possible factors.

Pressure on Infant's Head—In the light of what is now known about the osteology and physiology of the living young head it is considered inexcusable that natural birth be mechanically delayed for any reason. It is not difficult to visualize the possible consequences to the twenty preosseous areas of the young head when subjected to unnatural and highly undesirable pressures for purposes of delaying birth. In addition, the intrauterine pressure of about twenty-or twenty-five pounds per square inch exerts its influence on the skull of the foetus.

Oversedation of Mother may Affect Child—During birth there is a squeezing of fluid out of the head to aid in a reduction in its size. The parietal bones can overlap each other and over the frontal bones and vice versa. Too much anesthesia or sedatives given to the mother can keep the baby from crying properly when "slapped" to start the secondary respiratory mechanism or first inspiration of breath. This breathing and crying helps the bones and preosseous areas to open up and unfold from one another into a natural pattern of position.

Birth Problems Appear to Increase —About ten years ago only one person in approximately ten thousand had cerebral palsy. At present the figure is thought to be one in five hundred. In many newly born babies the frontal bones do not completely unfold from the parietals where they and the occiput are tucked under one another to protect the brain during birth. This unfolding is the reason for the bevel of the articulation being internal on the frontal bones. The overlapping of the bones at the top of the cranium is frequently observed to be held by tensions at the sphenobasilar and condylar area at the base. When this locked mechanism at the base in the region of the foramen magnum is released the upper overlapping molding problems in the vault often take care of themselves.

Birth Strain Relieved—At birth, physicians find a high percentage of new born heads to be in flexion and the sacrum in extension from the birth position. By relieving the strains found around the atlas, axis, and jagular foramen physicians are able to reduce the incidence of pyloric spasm and various feeding problems.

Base of Skull Vital Area—The approach to many clinical problems appears to center around the base of the skull where membranous articular strains involving vital areas are frequently found. The sacroilliac area is in a strained condition in many newborn and young infants and colic is often observed to be relieved when the condylar and sacral problems are corrected.

Inherent Mechanism to Release Pressure—Physicians have noticed infants who press their heads against them while being held or during examination and others who can be seen occasionally bumping their heads for no apparent reason. Some infants prefer to put only one side of their heads on their pillow. This is thought to be an inherent mechanism by which they are trying to release pressure in their necks or heads. They know something is wrong and try to help instinctively.

Forceps can Cause Trauma—Obstetrical forceps used during delivery are considered to be a help when needed and a protection for the head and ears, but if improperly placed can cause injury to the infant's head.

Early Examination Important — From this brief discussion it can be seen that new-born and young children can be subject to a great deal of trauma. Because any of the preosseous centers can become distorted and can calcify in an abnormal position if not corrected before calcification is complete, early examination and care is important.

Immediate Cranial Molding—Gentle cranial molding by the physician within the first two hours after birth is considered ideal and can do much to correct the strains found in many postnatal heads. If every child could have this highly important care as part of the obstetric and pediatric service dentists would find more symmetrical dental arches with teeth in better occlusion and requiring less orthodontic treatment.

Correction Before Calcification — Forces can produce maxillae that are locked into a position of internal rotation which can cause a buckling in

the palate area producing a high gothic type vault within the mouth. This can also cause the premaxilla to press forward. Erupting upper anterior teeth can protrude labially should the condition not be corrected before calcification takes place.

Preventive Orthodontia—Much can be accomplished in the first years for cases requiring orthodontic care later, sometimes even eliminating its need: (1) gentle spreading of one or both alveolar arches by the fingers will aid normal development. (2) Molding the hard palate and alveolar arches can be important in cases with a bent nasal septum or teeth that are not coming in straight. (3) The mother can be taught to do some of the simpler procedures such as using a V spread with the fingers to widen the alveolar arches. It requires little time and can be extremely beneficial.

Osteology of Living Head And Dental Methods

The dentist has a role in the production of membranous articular strains and their prevention. Operating methods and the measures employed are important. For example, the headrest on the dental chair should be firm enough to support the head yet be as soft as possible. The occiput of the patient rests in the V forms of the headrest putting compression upon the mastoid portion of the temporal bones. This pressure is enough to force the bones into a position of internal rotation and hold them there by involuntary action of the patient pressing backward against the headrest. This interruption of normal physiologic action could be one factor in favor of shorter dental appointments for some patients.

Gentle Handling Required—During extractions and other oral surgical procedures delicate handling of the hard and soft tissues is important. Only the lightest pressure and leverage should be employed. Removal of buccal bone and gentle elevation to loosen the tooth prior to the use of forceps should receive consideration. Mouth props are capable of producing powerful leverage that can produce strains within the cranial structures.

Possible Results of Difficult Extractions—Perhaps one of the most common strains that can be produced during difficult or forceful extractions if bone is not relieved is a torsion strain in the region of the sphenobasilar symphysis. Forcing the crown of a lower posterior tooth lingually has a tendency to separate the condyle of the mandible from the mandibular fossa of the temporal bone on the side opposite to the tooth being removed. This lateral, inferior stretch against the sphenomandibular ligament on the side opposite the extraction pulls against the pterygoid process of the sphenoid. This tends to twist the sphenoid on its anteroposterior axis thereby producing a torsion of the sphenobasilar symphysis with the great wing elevated on the side opposite the extracted tooth.

Fifth Nerve Neuralgia from Extraction—Schooley[4] has observed the condition described as a result of difficult extractions producing on occasion a fifth nerve neuralgia involving one or more of its branches. Either side can be involved but more frequently the side on which the extraction occurred is involved. Since the bones can remain under stress following extractions the problem is to prevent this. The palatine bone can be palpated before extracting the upper third molar by the roll out method using elevators, and can be palpated again after completing the extraction. By gently moving the ball of the index finger posteriorly along the lingual surface of the upper alveolar ridge to the area of the palatine bone the finger can be gently rolled downward and equilibrium restored to the palatine bone should it be found displaced. These residual strains help explain some postoperative neuralgias.

Force May Account for Sphenobasilar Torsion—Strong lateral and downward force applied to upper posterior teeth can also account for a torsion of the sphenobasilar symphysis, the greater wing of the sphenoid again being elevated on the side opposite the extraction. In this situation the force is transmitted from the maxilla to the palatine bone to the pterygoid process. In some cases the pterygoid process can be so far lateral as to crowd the coronoid process of the mandible. Through this mechanism a malalinement of the temporomandibular articulation can occur with associated premature points of contact of natural teeth or a faulty centric relation point should dentures be constructed.

[1]Schooley, Thomas F.: Correlated Mechanics of the Secondary Respiratory Mechanism, J. Osteo. Cranial A. 1:48-53, 1953.

Results of Rotation of Bones

Observation of the alveolar ridges in an edentulous mouth might show a downward and lateral position of the maxilla on the side of an externally rotated maxilla. Should teeth be present they may be observed to flare laterally more than those of the other side.

Contributory Cause of Tic Douloureaux—Internally rotated temporal bones and associated strains are thought to be one cause of Tic Douloureaux being produced by tension on the dural fold enclosing the Gasserian ganglion or obstruction to the free motion of fluids through it.

Other Symptoms—Disturbances in hearing, equilibrium, and eustachian tube function have also been observed.

Relation of Cranial Stresses And Mental Illness

The living head is subject to stresses similar to those in the rest of the body and these areas of decreased motion can reflect in the mentally ill. People sometimes find it impossible to be mentally alert because of faulty body chemistry, poor nutrition, abnormal physiology following birth injury, trauma, cranial strains, endocrine imbalance. The living head with its complex osteology, vital delicate structures, and membranes suggests thought for the hundred of thousands in private homes, special schools, and institutions who are regarded as being mentally handicapped. About one half of the hospitals beds in this country are occupied by mental patients, costing the tax payers about one billion dollars annually.

Physical Examinations—Many of

these mental patients have shown a high percentage of heads where the normal motility of the brain, normal fluctuation of the cerebrospinal fluid, and motion of cranial bones are greatly restricted. The sphenobasilar articulations are often observed to be locked in a flexion position.

Possibility of Restoration to Mental Health—If normal physiology and body chemistry could be established within the bodies and heads of these people it is possible that many could be restored to a useful life. Fifty per cent has been an estimate, and this might be a possibility if early instituted adequate nutrition, balancing of body chemistry, mental therapy, and elimination of oral and other infections were also included in the rehabilitation program.

Summary

Some phases of the living head with its complex osteology, delicate membranes, and vital structures in and near the dental field have been discussed. Awareness of the relationship to the living head will permit better diagnosis. Before, during, and after birth many future dental problems have their origin. Some of the prenatal, natal, and postnatal factors that can influence the oral tissues have been considered. The physician's care and treatment of the infant's head during birth and immediately afterward can have a direct bearing on the future of the teeth and oral structures.

Care of the human body may be supervised in numerous fields and professions, but the human body itself which functions as an integrated unit cannot be divided. The viewpoint of dealing with changing relationships, processes, and events rather than static entities which are fixed and rigid should be accepted. The dentist must be aware that what happens in other parts of the body can have its effect in the oral cavity and vice versa. Slight movement normally exists at all the cranial articulations and membranous strains can occur in these articulations resulting in relative fixation pressures or lack of normal mobility. In turn these fixations can be causative factors in the upsetting of normal physiology and a possible source of painful nerve reflexes which can disappear when equilibrium is restored within the cranial structures. Evaluation of the problems of body care demonstrates that all branches of the healing arts from an integrated group, each important to the other and to the total welfare of the person.

967 *B Street*

Cancer of the Gingiva*

SAM A. WILKINS, JR., M.D.,
and WILLIAM R. VOGLER, M.D.,

Summary and Conclusions

Eighty-one malignant neoplasms of the gingiva representing almost 1 per cent of all cancers seen over a 19-year period from 1937 to 1956 were studied and reported. The high percentage of females (54 per cent) in the study is unique but this may be related to the persistent habit of snuff-dipping still fairly common among certain women in the South.

Common Agent Suggested—The high frequency of multiple primary cancers arising in the mouths in these patients with leucoplakia suggests that the entire mucosa has reacted to a common insulting agent first to develop leucoplakia and, in turn, frank cancer. In this series that agent appears more often to have been chewing tobacco or snuff.

Irradiation Effective Therapy in Cancer of Gingiva—Although irradiation therapy has gradually been superseded by surgery as the method of initial treatment, it appears, however, just as effective as surgery curatively when the cancer is still confined to the gingiva. It is slightly less effective when lesions have spread to adjacent structures and of almost no curative value in treating regional metastases. Irradiation and surgery were equally effective in curing grade 1 lesions and equally less effective in curing grade II and grade III lesions in this series.

Surgery in Treatment of Cancer of Gingiva—Certain conclusions regarding the role of surgery in the treatment of cancer of the gingiva seem justified in view of these findings:

1. Surgery and irradiation are both of value in the initial treatment of limited lesions. The selection of one of these procedures over the other is made on the bases of certain factors other than the anticipated chance of cure.

2. Surgery will salvage some irradiation failures.

3. Irradiation will salvage an occasional surgical failure.

4. Surgery constitutes the preferred treatment of certain extensive malignant processes of the gingiva, particularly those which invade bone, and those in which irradiation has failed.

5. Surgery is the much perferred treatment when metastases to regional nodes have occurred.

6. Further extension of surgical methods bears little promise.

7. Local recurrence remains the major problem for attack.

Adapted from *Surgery, Gynecology & Obstetrics* **105**:151 (August) 1957.

*From the Department of Surgery, Emory University School of Medicine, and the National Cancer Institute, U.S.P.H.S., Emory University, Georgia.

The Mental FORAMEN INJECTION

NATHANIEL A. SELDIN, D.D.S., Hackensack, New Jersey

DIGEST

An infrequently used and underestimated method of securing anesthesia of the lower bicuspids, cuspids, and incisors is the mental foramen injection. This area of injection is apparently not favored by many dentists. In reality, the mental foramen injection is a simple and effective method of anesthetizing the bicuspids, cuspids, and incisors of the mandible. Many patients prefer this injection to the mandibular, particularly when the injection is close to meal time. Biting the tongue while eating is a possibility. Children frequently bite their tongues in an effort "to bite the sleep out." This article presents a step-by-step technique for a mental foramen injection.

Importance of Proper Technique

The fear of postinjection effects as a result of a mental foramen block should be overcome. Side effects from an injection in the mouth may result from any injection method if improperly applied. In fact, there are fewer unpleasant side effects from an improperly applied mental foramen injection than there are from improperly applied mandibular or posterior tuberosity injections or from an improper infraorbital injection.

Anatomic Knowledge of Area Required—Once the mental foramen block technique is mastered, it will be found an extremely valuable aid in the practice of dentistry. To achieve effective anesthesia from this or any other form of block or infiltration injections, the operator must acquaint himself thoroughly with the anatomy of the area to be anesthetized and with the proper technique. When these are mastered and due caution is exercised, the needle may be used wih confidence for any area in the mouth to be anesthetized.

Foramen Need Not be Entered—The solution, when placed directly over the mental foramen, will enter it and attack the mandibular nerve as it leaves the foramen to become the mental nerve and as it continues within the mandibular canal to become known as the incisive nerve. When the sheaths of these nerves are infiltrated by the anesthetic solution, successful anesthesia will be had in the desired areas.

Nerve Fibers Must be Saturated with Solution—Like the mandibular nerve block or any type of injection, the complete nerve fibers within the nerve sheath must be saturated with the anesthetic solution. Consequently, the more accurate the application of the solution, the more profound and effective the anesthesia, provided there is no anomaly or interference by another nerve or branch thereof.

Positions Must be Known—The mental foramen, unlike other foramina with which the dentist has to deal, has a more variable position. These variable positions, therefore, must be known and taken into account before effective anesthesia can be achieved.

Relative Locations Of Mental Foramina

In a study of one hundred edentulous mandibles undifferentiated as to sex, Tebo and Telford[1] established the following percentages:

"In 87 of these mandibles there were enough of the lower biscupids remaining to visualize correctly the relation to the foramen. The locations of the mental foramina in regard to the lower teeth were expressed in percentages and listed in six categories, as follows:

"1. Foramen anterior to the lower first biscuspid tooth—right, none—left, none.

"2. Foramen at the apex of the lower first biscuspid tooth—right, 2.3 per cent—left, 1.2 per cent.

"3. Foramen between the apexes of the lower biscuspid teeth—right, 25 per cent—left, 20.7 per cent.

"4. Foramen at the apex of the second biscuspid tooth—right, 46.0 per cent—left, 52.8 per cent.

"5. Foramen posterior to the second biscuspid tooth—right, 24.1 per cent—left, 24.1 per cent.

"6. Foramen below the root apexes of the first molar—right, 2.3 per cent—left, 1.2 per cent.

"And with the foramen located approximately ¼ of the distance from the symphysis menti to the posterior border of the ramus of the mandible."

When the mental foramen injection is given without the knowledge of the foramen's position, and when the foramen is not located by palpation, it is readily understood why so many failures are encountered. It is, therefore, imperative to become acquainted

[1]Tebo, H. G., and Telford, Ira A.: An Analysis of the Variation in Positions of the Mental Foramen, Anat. Record **107**:1 (May) 1950.

with the probable position and the correct technique of finding the foramen.

A Technique for the Mental Foramen Injection—The position of the dentist is a matter of choice. A position that is comfortable for one may be awkward for another. Do not, however, stand in front of, nor directly to the rear of the patient when attempting the mental foramen block. The position of the operator should be at the side or near the shoulder of the patient.

Procedure—1. Have the chair slightly tilted back and stand beside the patient's shoulder.

2. Place the index finger or middle finger on the skin somewhat above the rounded lower border of the mandible in the region of the cuspid and first biscuspid area.

3. Before proceeding to locate the mental foramen, advise the patient of the intention and of the peculiar feeling that will result when the exact spot is touched so that he will not be unduly upset.

1. ***Showing the palpation for the mental foramen location.***

2. ***Showing the shift of fingers and thumb over mental foramen area and index finger retracting the lip.***

4. After placing the index finger or middle finger on the region described, move the finger posteriorly and with pressure (but not too much) until the patient reacts with facial twinges, eye blinking, shoulder movement, or attempted head jerks.

5. Keep the finger there for exact location of the foramen has been found. Replace palpating finger with the thumb, retract the lip (the patient's mouth need not be wide open), sterilize and topically anesthetize the mucosa.

6. Insert the loaded syringe (using a one-inch, twenty-three-gauge needle, and at an acute angle) and with the bevel of the needle toward the bone.

7. The path of the needle is somewhat forward or direct and downward toward the bone. The needle should be felt directly under the ball of the index finger. In this position, the point of the needle will be either above the upper lip of the foramen or below the lower lip of the foramen.

With the needle somewhat retracted

3. ***Thumb and index finger in position; lip retracted, and pen grip of syringe in position for injection.***

from the bone, the bevel will be over the foramen opening.

Penetration of Foramen—1. The needle should not penetrate or slide under the periosteum.

2. When the point of the needle strikes bone and is felt under the index finger, retract slightly and inject slowly.

3. The flow of the anesthetic solution against the ball of the index finger may be felt. Keep the finger in position constantly, while injecting the solution. The flow of the solution will thereby be directed into the canal.

4. When the injection is completed, massage the area gently to facilitate the flow into the foramen and thus into the canal proper.

5. The depth of the needle penetration will be in the vicinity of two-fifths or three-fifths of an inch.

Procedure Completed—To achieve complete success of this block, it is also necessary to inject the incisive fossa to offset the anastamosis of nerve fibers from the opposite side. In the case of an extraction, the lingual mucosa must also be injected.

Conclusion

In conclusion, it is not implied that the mental block can supplant the mandibular block for anesthetizing the bicuspids, cuspids, and incisors. It is, however, suggested that the mental foramen injection is a valuable aid in dental anesthesia.

14 *Maple Avenue*

Coronary Artery Disease

Incidence of Mortality in Occupational Groups

In an analysis of deaths in England and Wales in 1950, coronary artery disease appears to be increasingly common in some occupational groups: (1) members of the major professions and higher social class had about 50 per cent greater mortality from coronary heart disease than the average person, and almost twice as high a death rate as semi-skilled and agriculture workers. (2) Construction workers had the lowest incidence of coronary heart disease. (3) Other diseases had the same relationship in occupational groups as in other years.

Adverse Factors—These are thought to be (1) a high fat intake, (2) cigarette smoking, (3) nervous strain, and (4) obesity.

Protective Factors—Habitual physical activity and moderate alcohol consumption are believed to be protective. No definite evidence of the reliability of these beliefs could be established. Married women of the various social classes did not show the same occupational predilection to coronary disease as the men.

Greater Incidence in High Occupational Groups—Study of the relationship between occupation and relevant habits of living, such as the use of leisure time, smoking, and food habits, may provide the answer to the much higher incidence of coronary heart disease in the highest occupational groups.

Adapted from *Morris, J. N.: Occupational Mortality, Coronary Heart Disease in* VTEJ *with Some Related Observations, Brit. J. Indust. Med.* **13**:287-290, 1956, *in Geriatrics* **12**:100 (Feb.) 1957.

The EDITOR'S Page

A PRELIMINARY report on the use of homologous arterial grafts to rebuild the dental ridge appears on page 491 in this issue. The principle of tissue transplantation of blood vessels is not new. For more than 50 years the rationale of blood vessel transplantation has been known to biologists. In 1908 the illustrious Alexis Carrel published on the subject in the *Journal of the American Medical Association.*

What makes the present article by Hopkins and Olson of interest is the application of the principle of artery grafting to the restoration of the dental ridge. A segment of human aorta is removed at autopsy. It is sterilized with care and preserved in an artery bank. When the oral surgeon wishes to rebuild the dental ridge he withdraws a piece of artery from the bank and implants the viable vessel in the dental ridge. The artery segment undergoes histologic evolution and fibrous proliferation. Although it is unlikely that calcified tissue develops from the fibrous connective tissue, it is a suitable base for the rebuilding of the alveolar ridge.

Fortunately, most persons who suffer the loss of teeth may expect a residual ridge that is sufficient to retain a denture. Even with marked resorption of the bony ridge, as an aftermath of severe periodontal disease or trauma, there usually is sufficient tissue to give satisfactory retention for a denture.

In the two cases reported by Hopkins and Olson, the arterial grafts were used to rebuild the ridge to improve the esthetics of patients who were using partial appliances. Most clinicians will agree that the esthetic factor is likely to be more critical in partial replacements than in full denture prostheses. It is also likely that the surgical success of small transplants would be greater than an attempt to rebuild an entire edentulous ridge.

The restoration of a ridge by an arterial graft is a surgical procedure that is indicated in occasional cases. In that respect it is like the implant denture. These two methods of restoration are valued developments that are to be used only after the usual prostheses have been found to be inadequate or have failed.

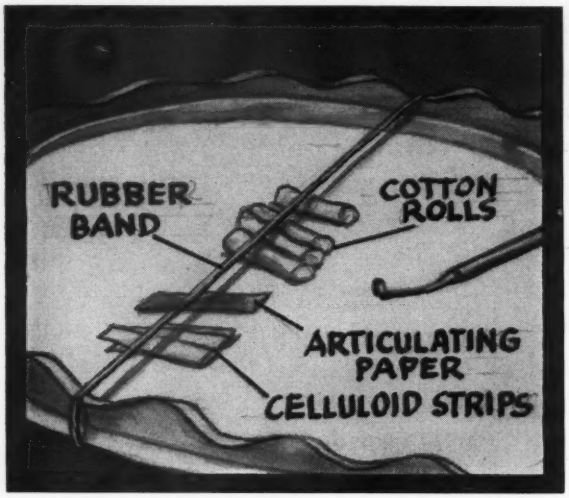
We may refer the reader who looks with skepticism at this procedure to a collective review of 84 homografts prepared by the Department of Surgical Research, University of Pennsylvania, and published within the last four months.[1] In these cases artery grafts were used to repair defects in blood vessels that were involved in aneurysms, coarctatations, or thrombotic processes. The results were uniformly good. In cases where the graft is used as a precursor for fibrous tissue, as in reconstruction of the dental ridge, the results should be even better.

In the series of 84 homografts the vessels were removed within five hours of death. The most satisfactory "methods of preservation which have had the widest use have been refrigeration in electrolyte and nutrient solutions, fixed solutions such as alcohol and formaldehyde, and freezing, or freeze-drying . . . In the host the arterial homograft eventually becomes a scarred fibrous tube lined with endothelium. The elastic tissue of the homograft survives for as long as two years. Many methods of preservation have been tried, but no single method has proved to be superior. For six weeks' storage a balanced salt solution with refrigeration gives excellent results. For longer storage freezing of the graft in a balanced salt solution at 70 degrees Centigrade and storage at this temperature give good results. Freeze-drying also gives good results. Other methods of preservation may prove superior, but the experimental data are not conclusive at this time.

"The sterilization of grafts is accomplished by two general methods, radiative and chemical. At present no method has proven superior. Clinically, the value of arterial homografts seems promising in view of the large number of satisfactory results reported within the past few years."

[1]Lehr, H. B., and Blakemore, W. S.: Arterial Homografts, with a Presentation of 84 Cases, Internat. Abstr. Surg. **105**:209-232 (September) 1957.

Clinical and Laboratory

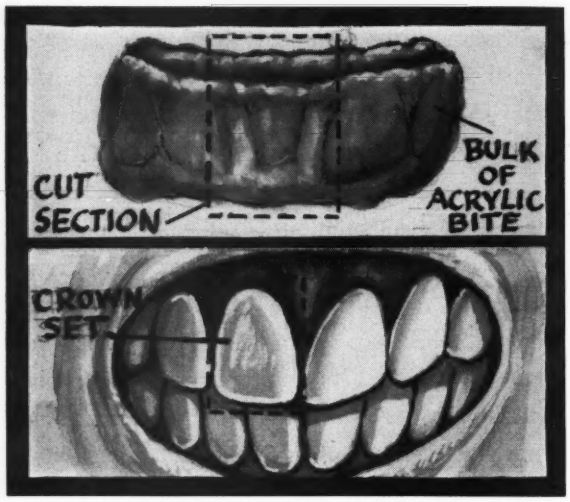


1

Retention for the Bracket Cover

Felix Glass, D.D.S., Queens Village, New York

1. A rubber band across the bracket table holds the cover and lightweight objects in place and prevents them from being blown away by wind, the fan, or the air conditioner.

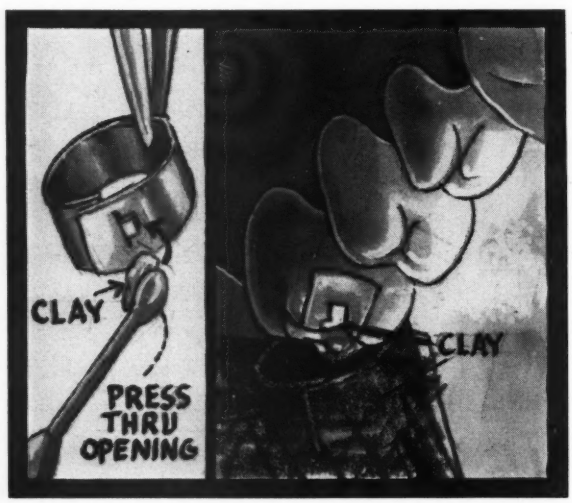


2

A Temporary Crown

Harold O. Bakke, D.D.S., Minneapolis, Minnesota

2. Place a gob of self-curing acrylic over the preparation and have the patient bite. Spray hot water over the mass. Remove and allow to set in hot water. Cut away all excess material. Contour and trim that part of the acrylic that fits over the preparation to form a temporary crown.



3

Cementation Technique

R. M. Way, D.D.S., Galesburg, Illinois

3. Fill the attachments on orthodontic bands or the female part of precision attachments with soft modeling clay before cementation to prevent the cement from clogging the small openings.

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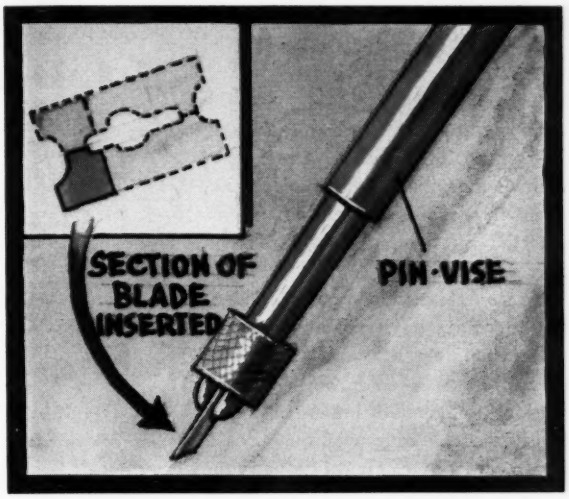
SUGGESTIONS . . .

A Trimmer for Silicates

Martin H. Berman, D.D.S., Floral Park, New York

4. A razor blade is cut into small sections. A section is held firmly in a pin vise to use as a trimmer for silicate restorations.

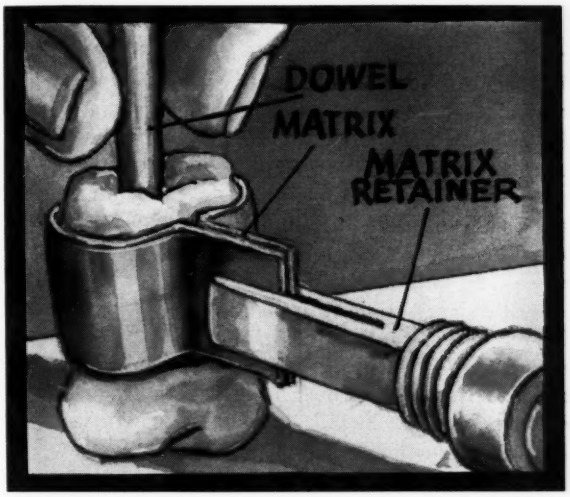


4

Holding a Copper Band

John B. Robinson, D.D.S., John Day, Oregon

5. Grasp the copper band in a matrix and attach a retainer. This is a convenient method for holding the band erect while placing a dowel in the soft stone.

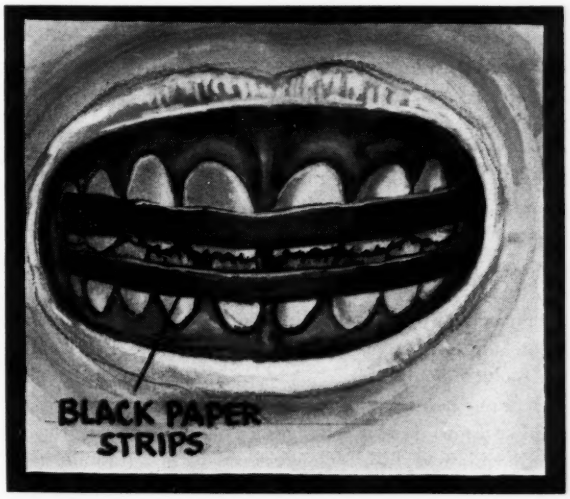


5

Correction of Uneven Teeth

W. C. Norcross, D.D.M.D., East Walpole, Massachusetts

6. Place a strip of black paper over the labial surface of the teeth and allow the uneven incisal edges to protrude. This will give the patient an idea of the amount of tooth structure to be removed to improve the esthetics or bite.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 522 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

Alopecia Areata

Alopecia areata refers to loss of hair in round or oval patches with sharply defined margins. In the typical case a small area of alopecia is usually detected by the patient's barber or hair dresser.

The onset may be rapid and usually there are no signs or symptoms other than loss of hair. The initial area presents a soft, white surface without any signs of inflammation or infection. The course of the disease is rather variable. The initial circumscribed patch may never enlarge or several areas may develop simultaneously or at regular intervals on adjacent sites.

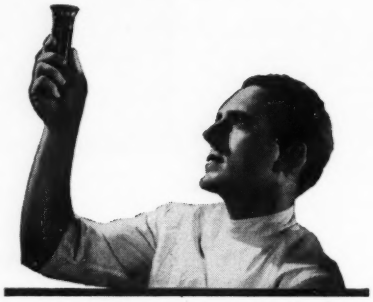
The areas of alopecia may touch at their borders but they usually remain individually different. Occasionally they go on to form extremely large bald areas. In some instances total alopecia of the scalp may result. The hairs surrounding the patch are usually normal and therefore are removed with difficulty. If the disease is still in the active phase, however, the hairs at the margin may be removed with little effort. The marginal hairs often become fragile and shrunken. A section of the hair shaft within the follicle is often atrophic and terminates in a white pointed bulb. The hair above the surface is considerably broader and gives the hair the appearance of what has been referred to as the "Indian club or exclamation point" type of hair of alopecia areata.

The etiologic factors of importance in alopecia areata have long been a subject of controversy. The major causes are psychogenic, microbic, and toxic. There is some evidence that suggests the possibility of an unknown virus, as well as various bacteria, as the causative agent. Occasionally there are reports of improvement after removal of foci of infection in the teeth, tonsils, and elsewhere in the body.

Syphilis has long been associated with scalp and hair changes. The usual type of syphilitic alopecia consists merely of a diffuse and general thinning of the hair, which occurs during the third to the sixth month of the disease. The change consists in a thinning of the hair and not a complete baldness of an area. The patches are more numerous, less circumscribed, and less polished in appearance. There is no tendency of the hair to regrow without pigmentation. Alopecia due to syphilis is comparatively simple to cure. Adequate therapy with penicillin in doses of approximately 10 million units will suffice to cure both the syphilis and the alopecia.

Behrman, Howard T., and Wild, S. Theodore: *Alopecia Areata Due to Syphilis, JAMA* **161**:726-727 (June 23) 1956.

MEDICINE *and the Biologic Sciences*



Diabetes—Ophthalmic Problems

Sudden changes in refractive errors should make the ophthalmologist suspicious of diabetes. As the blood sugar concentration varies, the refractive state of the eye may change from hypermetropia to myopia and vice versa.

These changes have been attributed to fluid entering the lens, osmotically causing myopia. Under treatment the conditions are reversed. Glasses should not be prescribed until at least three to six weeks after the refractive state has been stabilized.

The first symptom of diabetes may be double vision. The recovery is slow, usually taking about three months. During that time the patient should wear an occluder. Newly formed blood vessels may be noted about the sphincter of the iris. This condition is called rubeosis iridis diabetica. The presence of these vessels signifies a poor prognosis for both vision and the retention of the globe.

Lens changes in the older diabetic patient are treated as ordinary senile cataracts with the same results. Optic nerve changes (atrophy) are due to vascular changes rather than to increase in blood sugar. The degree of diabetic retinopathy is related to the duration of disease and not to its severity. Visual damage depends on macular involvement.

Treatment of the ocular complications of diabetes is the treatment of diabetes itself. Proper dietary control and insulin regulation is the only effective treatment. The value of rutin, hesperidin, ascorbic acid, vitamin P complex, and testosterone has not been determined.

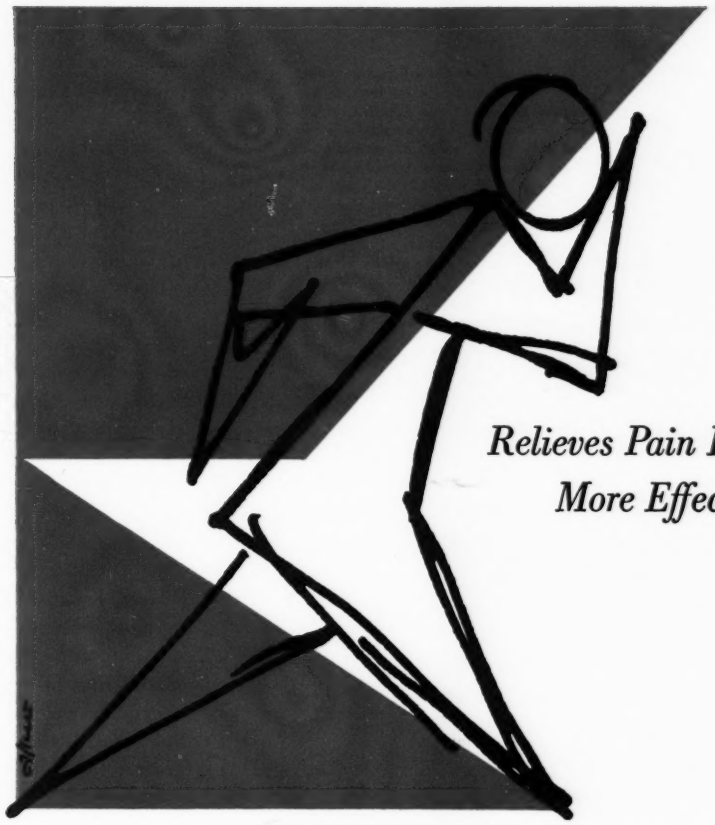
Stratti, L. W.: Ophthalmic Problems in Diabetes, Pennsylvania Med. J. **59**:331-333 (March) 1956.

The Liver and Heart Failure

Many of the symptoms and signs of congestive heart failure are related to the liver. Most patients with cardiac decompensation show altered liver structure and function.

Hepatic congestion primarily responsible for symptoms, causes pain in the upper right quadrant which may be confused with that of cholecystitis or hepatitis. Increase of pain with exertion, however, suggests that heart failure is responsible. In cardiac patients, particularly in those with fever, hepatitis or gallbladder disease should not be overlooked.

Hepatomegaly is valuable in the



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References: 1. Hammes, E. M., Jr.: *Journal-Lancet* 72:67, 1952. 2. Goodman, Louis S. and Gilman, Alfred: *The Pharmacological Basis of Therapeutics*, second ed., 1955.

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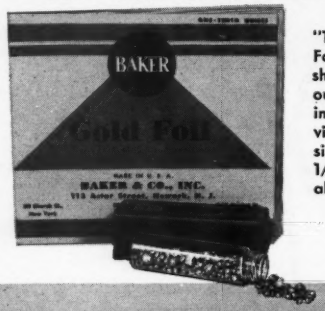

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To most people, though, he was Lionel Barrymore, the actor, and they loved him.

He was crusty and kindly, adventurous, stubbornly independent, and game as they come. Although imprisoned in a wheel chair in 1936, he went resolutely on working for nearly twenty years more.

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diagnosis of cardiac failure. An enlarged liver should be distinguished from a palpable one by location of the upper border. Tenderness and changes in the liver size, preferably measured in centimeters, are the best signs of congestion. Tricuspid insufficiency results in true expansile pulsations of the liver. Anorexia and weight loss may be related to liver dysfunction.

The initial histologic change is dilatation of the sinusoids with narrowing and atrophy of the liver cords in the centers of the lobules.

Necrosis of the central liver cells, condensation of the reticulum and thickening of the walls of the central and hepatic veins ensue. A combination of congestion and anoxia of the liver cells is probably responsible for these anatomic alterations.

Liver function tests are altered in most patients with heart failure. Bromsulphalein retention is affected principally by cellular damage and reduced hepatic blood flow. This is the most sensitive index of liver dysfunction with cardiac failure. Elevated serum bilirubin is usually due to hypoxia and cellular necrosis, but blood destruction in pulmonary infarcts may contribute to jaundice. Decreased serum albumin levels may be due to poor nutrition.

Liver abnormalities occasionally complicate treatment of the cardiac patient. Hypersensitivity to dicumarol due to impaired prothrombin production may make anticoagulant therapy precarious. Accumulation of antidiuretic factors such as aldosterone contributes to edema formation. Ammonium chloride may precipitate hepatic coma if liver function is impaired. A low sedimentation rate may result from changes in serum proteins and mask activity of rheumatic fever.

Adequate nutrition is important for patients with heart failure to prevent liver cell damage. Adequate food intake may be difficult with anorexia, weight reduction diets, and salt restriction. An ample supply of protein is essential. Frequently, 4 to 6 small meals daily are recommended.

Fairlie, Chester W.:The Liver in Congestive Heart Failure, Mod. Con-

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cepts Cardiovas. Dis. **25**:307-309 (*April*) 1956.

Radium Exposure—Late Effects

Internal deposition of slowly decomposing radioactive elements may produce a variety of signs and symptoms years after exposure. The diagnosis should be suspected in middle-aged persons with skeletal changes and tumors, dental abnormalities, and some types of anemia.

Radioactivity initiates a sequence of events which may be modified by (1) trauma, (2) vascular damage, and (3) the balance between bone repair and destruction. Radiation can also accentuate existing disease processes.

Patients should be questioned about exposure in industry to luminous watch-dial paint, previous medical treatment with radium salts, or inhalation or ingestion of radium. Unfortunately, patients may not remember any previous radium treatment. Roentgenographic changes in the skeleton may help to confirm the diagnosis. More specialized procedures include measurement of radon in expired air, radiochemical analysis of a twenty-four to forty-eight-hour specimen of excreta, external measurement of gamma-ray activity, and radiochemical analysis of a bone specimen.

Hematologic changes are similar to those seen with acute external radiation. Anemia is refractory to treatment. Symptoms usually appear fifteen to seventeen years after exposure. The time of onset is independent of the amount of radium retained. Aseptic necrosis of the femoral head is found in about 14 per cent of patients. Bony fragility may result in fracture after slight trauma. Bone sarcomas usually appear in the ends of bones. The sites of tumor formation are ordinarily not the sites of aseptic necrosis. The latent periods of development of bone tumor vary with the amount of radium, but the course between discovery of the lesion and death is not affected by the dose.

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Slightly

Controversial

This column is being thought up as the announcement of the earth satellite is being broadcast. That event, despite its communistic origin, is as it should be so long as it is confined to peacetime uses. Races between nations on the advancement of science, rather than in the production of armament, is a good trend.

Now let us have an international race on a cure for cancer, the elimination of dental decay, or even *the production of an unbreakable denture material.*

Well we (the U.S.) have won that last race already. An unbreakable denture material is a reality. It is called "Miracle 50" and its companion is called "Mystic 100". *From the standpoint of any conceivable dental accident, both are unbreakable.*

You can literally throw both against a stone wall, and *they bounce back intact.*

Miracle 50 is estimated to be many times stronger than regular denture material. It is for all routine fulls and partials. It also has less water sorption. *One shade.*

Mystic 100 is for the nth degree of denture perfection. It is estimated to be twice as strong as Miracle 50. It has even less water sorption than Miracle. *Three shades.*

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In the event you process your own dentures, we recommend Mystic 100. It comes in single unit preweighed powder and liquid. Use regular processing equipment.

A paper on the subject is available.

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bones are principally areas of decreased density. The percentage of the affected bone varies with the amount of retained radium and may serve as a rough index of the retained dose. The severity of roentgenographic alterations cannot be correlated with the intensity of duration of irradiation.

Treatment consists principally of supportive and orthopedic care for the skeletal lesions. ACTH and cortisone may afford some pain relief. Blood transfusions apparently are the only effective management procedures.

Roentgenograms of sites of persistent skeletal pain should be made frequently to detect tumors in early stages. Suspicious areas should be biopsied promptly, for amputation may be life saving if performed early enough in the course of the disease.

Looney, W. B.: Late Effects (Twenty-five to Forty Years) of the Early Medical and Industrial Use of Radioactive Materials, J. Bone & Joint Surg., **38**:392-406 *(April)* 1956.

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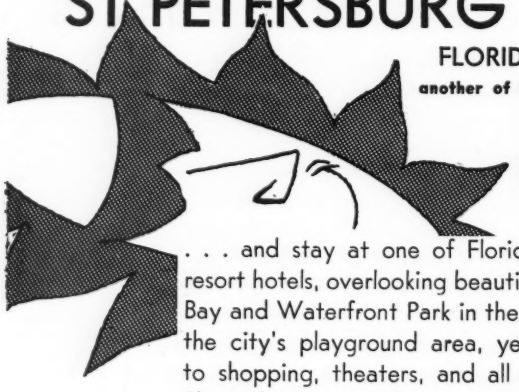
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Contra-Angles

"He's Sick, Dear"

A few months ago an aunt of mine died in the 92nd year of a good and useful life. She was born on a prairie farm and spent her entire lifetime in the same community. What little formal education she received was had in a country school that was named for her mother's people.

Her contributions were measured in hard work, integrity, a gay spirit, a sustaining outlook of charity, and a depth of faith. Although her contributions were confined to her own community and her name was unknown to the world outside, her influence will be extended over the years in the lives of those who were in the good fortune to know her.

I am quite certain that she never heard the word "biology" and I am positive that she never needed the services of a psychiatrist. Her ability to withstand adversity came from the wellspring of faith, "the substance of things hoped for, the evidence of things not seen." Her tranquility in human relationships came from the virtue of charity.

Her charity was not in almsgiving, although she left more than a tithe of her modest estate to such worthy ends. Her charity was directed toward the weakness and derelictions of her fellow human beings—the greatest of all charity.

When her irascible or irritable friends or relatives, such as I, expressed a dislike or an intolerance to other human beings she was without poverty for an explanation: "He's (or she's) sick, dear."

This might sound like a mealy-mouthed, pollyanna kind of excuse, an unsophisticated form of rationalization of the kind that psychiatrists are quick to deplore. As I mentioned,

(*Continued on page* 521)

(*Continued from page* 518)

she never needed the services of these practitioners and if she had heard their lingo she would have told them firmly that she was aware of all their "facts" long before her contemporary Freud was pouring them out to the world.

She did not believe that people are evil or that they are born bad. Over her years she observed that people often act in strange and unbecoming ways because they are sick. The juvenile delinquent is sick. The man hectored by making a living for a family is often sick. The overworked mother is frequently sick. The menopausal woman (or man) may be sick. The old, the feeble, the homeless, the friendless are sick.

The learned biologists have neat labels for all these illnesses: birth injuries, the stress syndrome, endocrine imbalances, constitutional inadequacies are a few. The labels would not have impressed my aunt and I am sure that she was never so naive as to confuse a *name* for a *fact* or a *thing*. In that wisdom she was miles ahead of the people who prate about semantics.

This dear old lady was also aware, without knowing the biologist's expressions, that diseases have prodromal states. She knew that long before people are clinically sick they are often in ill health for days, or months, or even years. The prodromes are the shadows that fall before frank disease strikes. Changes in behavior, in moral values, in matter and content of speech, in appearance often foretell what lies ahead. People who exhibit these precursors of disease are likely to express them in strange and peculiar ways. They are, indeed, sick! Wisdom knows what science cannot reveal.

I look back at people who acted contrary to the standards my own arrogance had erected. These people gave offense because they either did things that I did not like or did not do things that I thought they should have done. My pride had set the standards. Any deviation from my prideful standards I considered to be an affront and an annoyance. When I expressed myself on such occasions

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[1]Muhler, J. C. and Radike, A. W.: Effect of a dentifrice containing stannous fluoride on dental caries in adults. II. Results at the end of two years of unsupervised use. J.A.D.A. 55:196 August 1957.

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(See pages 510 and 511)

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Subject: _____

Explanation of Procedure:

Sketch:

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in the presence of my aunt I was told: "He's sick, dear."

Now I know that my aunt was a far better diagnostician than I and certainly she was more endowed with compassion. She was unencumbered with scientific theories, with equations, with biologic concepts, with double-talk. She was seeing a person as a continuum: as something that once was, that now is, and that will be. I was observing from one position in the channel of time: the fragment that is the present.

Disease is more than an invasion of microorganisms, more than the rapid multiplication of unwanted cells. The concept of illness must also include the birthright of resistance or its lack; the recognition of stressful agents and the response of the human organism to these stressors. My aunt knew that, but let us see how it is said by an eminent physician, Edward L. Bortz in the *Journal of the American Medical Association:*

"Since life entails a continual striving to attain aims, it is impossible to conceive of living without stress. The objectives of an ambitious individual are only obtained by strong drive with the expenditure of energy. Without some commitment of this kind there can be no stress. For many authorities the terms stress, strain, and striving are practically identical. Without motive, there is no effort, without effort there is no strain, and without strain there is no stress. Stress implies combat—combat with oneself or against some tendency or habit or against some circumstances in general. The time of stress may be short or long; the outcome may be unsuccessful. As a rule, the individual is aware of the stress. The stress itself is not so important as the depletion of energy leading to exhaustion. The problem then is simplified by consideration of maintenance of adequate organic reserve that may be physical or mental. Antistress factors then take on a new significance.

"Fatigue, like stress, is a many-sided experience, one for which an adequate definition has not been stated. Fatigue refers to the condition

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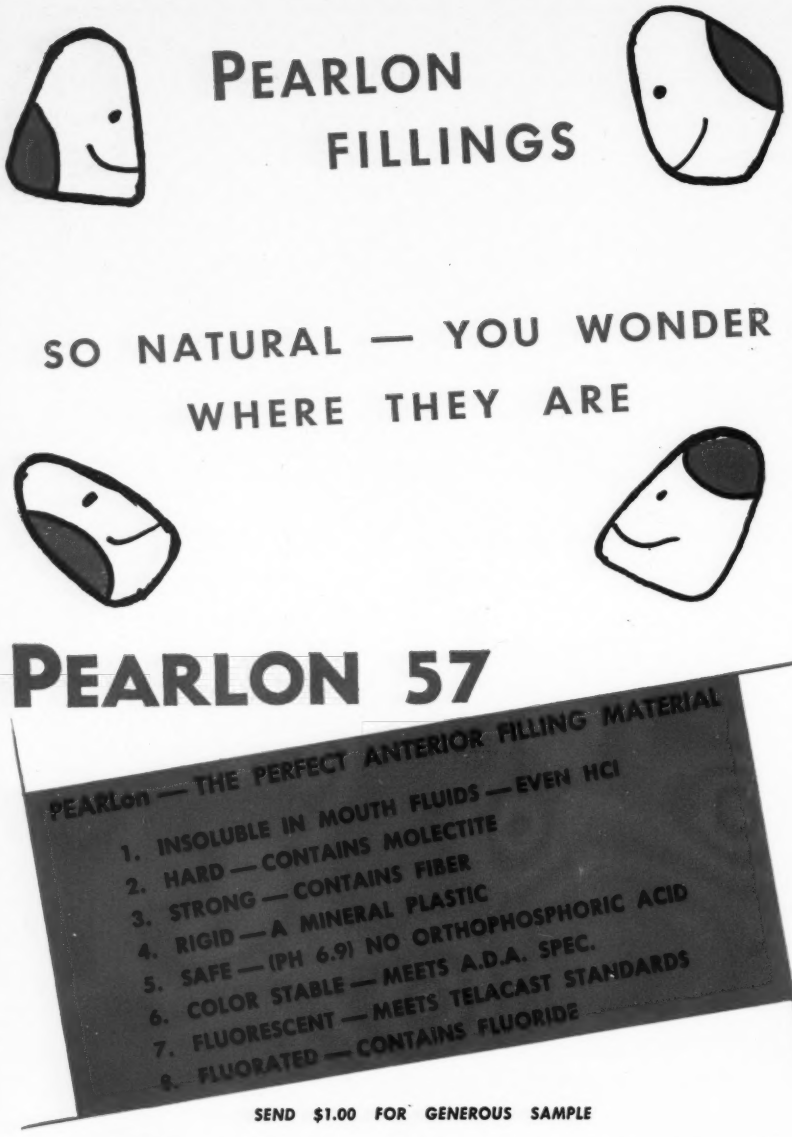
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Of Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1957.

State of Pennsylvania,
County of Allegheny,

ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. C. Ketterer, who, having been duly sworn according to law, deposes and says that he is the Vice President of the Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 4.1, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

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Vice President

Sworn to and subscribed before me this 23rd day of September, 1957.

(Seal) N. M. Gaertner, Notary Public.

of a body weakened by prolonged stress. This may set the stage for many clinical syndromes. The majority of these are referable to the circulation, the digestive tract, and the central nervous system. Definite changes in the physiochemical pattern of the blood may frequently be discovered. Fatigue is subjective; the patient has difficulty in performance. There is a drag and increasing unwillingness on the heart, the brain, and the nervous system to respond to demand. A tired person is unlikely to have any enthusiasm about anything. When he is enthusiastic the fatigue disappears. Weariness and boredom in oldsters are invited by lack of motivation. Personal attitudes take on significance as motivation reflecting a sense of values. This becomes more and more important with advancing years.

"Conditions which produce stress and fatigue leading to exhaustion are now being studied. Their reflection in the various constituents of the blood and tissue fluids is becoming known. Protective nutrition, anxiety-resolving devices, and the specific motivation are basic essentials. These are now generally accepted. Margins of reserve for each individual may be recreated that will grant him longer life and, perhaps, a more enjoyable one. Improved living conditions, which are the attributes of a society highly sensitive to social responsibility in the atomic era, are capable of bringing about a deeper measure of enjoyable existence.

"In resisting the useless expenditure of energy, man's fight with time is his greatest battle. In that battle, his emotional life—the surplus of hope over despair, of love over indifference, of motive over resignation—is highly important. As Helton points out, it is not a fight for the duration of the body so much as it is a fight for the duration of the capacity for happiness. One can be too busy and too active in the process of maturing to be annoyed by the deteriorations of aging. Purposeful activity up to the limits of physiologic and mental optimum represents the most potent factor in the fight against

(*Continued on page* 528)

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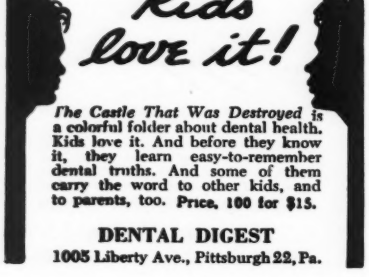
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(*Continued from page 524*)

premature human deterioration."

The human being is tripartite: he is body, and mind, and soul. The biologist sees him as body; the educator and philosopher as mind; the theologian as soul. When he is sick in one dimension of his wholeness he is sick in all three. The three divisions are one and inseparable. My aunt in her wisdom knew that and I am sure that was her reference when she said: "He's sick, dear."—E.J.R.

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